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10/500,738	07/06/2004	Teemu Tanner	032221-049	6685

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EXAMINER

KINNEY, ANNA L

ART UNIT PAPER NUMBER

1731

DATE MAILED: 02/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/500,738

Applicant(s)

TANNER, TEEMU

Examiner

Anna Kinney

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/6/04 & 1/26/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the bleaching step" in lines 3-4 and 6 of the claim. There is insufficient antecedent basis for this limitation in the claim. The applicant has not positively recited a bleaching step.

Claim 3 recites the limitation "said wood chips" in line 3 of the claim. There is insufficient antecedent basis for this limitation in the claim. No previous reference to wood chips is provided in claims 1, 2, or 3.

Claim 3 recites the limitation "the mechanical defibering step" in lines 4-5 of the claim. There is insufficient antecedent basis for this limitation in the claim. The applicant has not positively recited a mechanical defibering step.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5-7, 12, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Janson (U.S. Patent 4,116,759) in view of Kruger et al (U.S. Patent 4,260,452).

With respect to claim 1, Janson discloses a method for recovering chemicals from the spent liquor (col. 1, lines 35-38) of the bleaching step by concentrating and combusting (col. 1, line 68 – col. 2, line 8) the spent liquor and dissolving the ash (col. 2, lines 45-46) thus formed into water, wherein the alkaline conditions in the bleaching step (col. 1, lines 35-38) are obtained by adding alkali metal aluminate (col. 3, lines 35-37) to the pulp to be bleached, which alkali metal aluminate at least to a part is said ash (col. 4, line 54 – col. 5, line 5 and col. 3, lines 45-46; and col. 3, lines 35-37) dissolved in water. Janson does not disclose that the pulp is mechanically defibered, or that it is bleached with peroxide and washed.

Kruger et al discloses bleaching (col. 5, lines 54-56) mechanically defibered pulp (col. 5, lines 46-51) with peroxide (col. 5, lines 54-56) in alkaline conditions and for washing (e.g., vacuum filter; col. 11, lines 5-8) the bleached pulp. It would have been obvious to wash the pulp to remove bleaching chemicals for recovery.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply the method of recovering chemicals of Janson to bleaching of mechanically defibered pulp, as described by Kruger, to obtain the invention as specified in claim 1.

The motivation would have been that since alkali is required also for the bleaching of pulp, conventional bleaching alkali can be substituted by chemicals, which

Art Unit: 1731

can be regenerated (Janson, col. 1, lines 35-38); and that due to its high yield, mechanical wood pulp can be produced at low unit production cost (col. 1, lines 35-37).

With respect to claim 5, Janson discloses a maximum temperature of 120°C (col. 4, lines 40-42), which contains one specific point within the claimed range of about 20-150°C.

With respect to claim 6, Janson discloses a pH value of 9.9 (col. 4, lines 44-49), which contains one specific point within the claimed range of about 9.5-12.5.

With respect to claim 7, Janson that the concentrated spent liquor of said bleaching step is combusted at a temperature of 200-1500°C, which encompasses the claimed range of 500-1100°C.

With respect to claim 12, Kruger discloses a temperature of between 50 and 70°C (col. 11, lines 1-3), which contains two specific points within the claimed range of about 50-100°C.

With respect to claim 16, Kruger discloses a pH value of near 11 (col. 11, lines 1-3), which contains one specific point within the claimed range of about 10-12.

Claims 2, 10, 13, 14, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Janson and Kruger, as applied to claim 1, above, and further in view of Yarmarkt et al (4,388,148).

With respect to claim 2, Janson and Kruger do not disclose expressly sodium aluminate.

Yarmarkt discloses adding an alkali metal aluminate to pulp material for mechanical treatment (Abstract) and that the alkali metal aluminate is sodium aluminate (col. 4, lines 11-19).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use sodium aluminate as described by Yarmarkt as the aluminate salt of Janson and Kruger to obtain the invention as specified in claim 2.

The motivation would have been that the addition of five pounds of sodium aluminate per dry ton pulp production achieves at least a 10 percent reduction in energy consumption without loss of pulp quality (col. 7, lines 6-10).

With respect to claim 10, Janson is applied as in the rejection to claim 5, above.

With respect to claim 13, Kruger is applied as in the rejection to claim 12, above.

With respect to claim 14, Janson is applied as in the rejection to claim 6, above.

With respect to claim 17, Kruger is applied as in the rejection to claim 16, above.

With respect to claim 18, Janson is applied as in the rejection to claim 7, above.

Claims 3, 4, 11, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Janson, Kruger, and Yarmarkt, as applied to claims 1 and 2 above, and further in view of Admitted Prior Art (Specification, p. 2, line 17).

With respect to claim 3, Kruger discloses passing the pulp after the mechanical defibering step to said bleaching step (col. 5, lines 50-56).

Yarmarkt discloses impregnating (1) said wood chips (col. 5, lines 44-49) to be mechanically defibered, applying an aqueous solution (col. 4, lines 42-49) of sodium aluminate to the pulp material while it is being charged to the refiner.

Janson, Kruger, and Yarmarkt do not disclose expressly that the impregnation solution contains sodium aluminate.

Admitted Prior Art discloses that in a CTMP plant (i.e., mechanically defibered pulp), chips are impregnated with a  $\text{Na}_2\text{SO}_3$  solution (p. 2, line 17).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use sodium aluminate as an impregnation solution as described by Admitted Prior Art in the impregnation step of Yarmarkt to obtain the invention as specified in claim 3.

The motivation would have been to reduce energy consumption in the mechanical treatment of the pulp material (Yahrmarkt, Abstract, lines 1-6).

With respect to claim 4, Janson discloses utilizing the ash dissolved in water (col. 6, lines 7-16) for the preparation of pulps (col. 4, lines 4-7). The impregnation step of said wood chips to be mechanically defibered (as disclosed by Yarmarkt and Admitted Prior Art in the rejection to claim 3, above) is part of the preparation of pulps. Therefore, it would have been obvious at the time of the invention to a person of ordinary skill in the art to at least partially prepare the impregnation solution for the wood chips from the ash dissolved in water.

With respect to claim 11, Janson is applied as in the rejection to claim 5, above.

With respect to claim 15, Janson is applied as in the rejection to claim 6, above.

Claims 8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Janson and Kruger, as applied to claim 1 above, and further in view of Nykanen (U.S. Patent 5,302,246).

With respect to claim 8, Janson and Kruger do not disclose expressly the solids content of the concentrated spent liquor.

Nykanen discloses pulp bleaching with recovery (Abstract) and that the spent liquor received from the bleaching step (col. 8, lines 33-38) is concentrated to a solids content of 50-60% (col. 8, line 67 – col. 9, line 7), which contains two specific points within the claimed range of at least about 30%.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to concentrate spent bleaching liquor to the concentration described by Nykanen in the pulp production and recovery method of Janson and Kruger to obtain the invention as specified in claim 8.

The motivation would have been to concentrate the effluent to a sufficient level so that it can be incinerated (col. 8, line 67 – col. 9, line 3).

With respect to claim 19, Nykanen discloses two stages of concentration, going from 0.2-0.5% solids to an intermediate concentration of about 10-30% solids, to a final concentration of about 50-60% solids (col. 9, lines 3-7). Therefore, Nykanen effectively discloses a range of 10-60% solids, which encompasses the claimed concentration of about 35-45% solids. See MPEP 2144.05 I. At the time of the invention, absent a showing of unexpected results, it would have been obvious to a person of ordinary skill in the art to optimize the final solids content to achieve a level sufficient for incineration. It has been held that discovering the optimum or workable ranges or an optimum value of a result effective variable involves only routine skill in the art. See MPEP 2144.05 II. In addition, the Examiner considers about 30% solids to allow for concentrations slightly



higher, and the claimed about 35% solids to allow for concentration slightly lower, such that the Examiner considers the ranges to be overlapping; the Examiner also considers about 50% solids and the claimed about 45% solids to provide similarly overlapping ranges.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Janson, Kruger, and Yahrmak, as applied to claim 2 above, and further in view of Nykanen.

With respect to claim 20, Nykanen is applied as in the rejection to claim 19, above.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to concentrate spent bleaching liquor to the concentration described by Nykanen in the pulp production and recovery method of Janson, Kruger, and Yahrmak to obtain the invention as specified in claim 20.

The motivation would have been to concentrate the effluent to a sufficient level so that it can be incinerated (col. 8, line 67 – col. 9, line 3).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Janson, Kruger, and Nykanen as applied to claim 8 above, and further in view of Crosby et al (U.S. Patent 3,396,076).

With respect to claim 9, Janson, Kruger, and Nykanen do not disclose expressly that flue gases are used to concentrate spent liquor.

Crosby discloses recovery of bleach plant effluent and that the concentrated spent liquor of the bleaching step is further concentrated with hot flue gases (col. 4, lines 22-36) discharged from the combusting step of said spent liquor.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use flue gases to concentrate spent bleaching liquor as described by Crosby in the pulp production and chemical recovery method of Janson, Kruger, and Nykanen to obtain the invention as specified in claim 9.

The motivation would have been that this greatly reduces odor emission from the recovery furnace stack (col. 4, lines 34-36).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following reference was cited in the International Search Report as a "Y" reference: Database WPI, AN 1981-48892D & JP 56 0568086 shows peroxide bleaching of mechanical pulp with spent liquor combusted and alkali recovered from the ash. The following references were cited in the Finnish search report as "Y" references: RU-A 1155644 shows mechanical pulping with sodium aluminate; U.S. 2601110 shows pulping lignocellulose with sodium aluminate; Janson, J., "The use of unconventional alkali in cooking and bleaching, Part 1. A new approach to liquor generation and alkalinity", Paperi ja Puu, No 6-7, 1977, pp. 425-430 shows regeneration of bleaching alkali using sodium aluminate; Janson, J., "The use of unconventional alkali in cooking and bleaching, Part 3. Oxygen-alkali cooking and bleaching with the use of borate", Paperi ja Puu, No 2, 1978, pp. 89-93 shows mechanical defibration with bleaching; FI 60041 and English equivalent U.S. 4,384,921 show pulping using sodium aluminate; and FI 66034 and English equivalent CA 1 185 408 pulping with sodium aluminate. Although these references are relevant to the case,

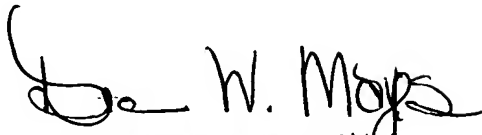
the references used in the rejections above currently provide better combinations in the Examiner's opinion. U.S. 3,787,283 shows recovery of sodium aluminate from spent liquor combustion by combining the ash and water. U.S. 6,364,999 shows bleaching mechanically defibered pulp with sodium aluminate added during the pulping process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna Kinney whose telephone number is (571) 272-8388. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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